

## PATENT SPECIFICATION

(11) 1 211 832

## DRAWINGS ATTACHED



1 211 832

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 2A9C 2A9Y 2CX

## (54) ADJUSTMENT MECHANISM FOR RECLINING ARMCHAIR

- (71) We, HIMOLLA POLSTERMOBEL-  
 WERK CARL HIERL G.m.b.H., a Company  
 organised under the laws of Germany, of  
 8252 Taufkirchen/Vils, Germany, do here-  
 by declare the invention, for which we pray  
 that a patent may be granted to us, and  
 the method by which it is to be performed,  
 to be particularly described in and by the  
 following statement:—
- The invention relates to an adjustment  
 mechanism for reclining armchairs having  
 an extensible leg-rest support, an actuating  
 lever for the leg-rest support being connected  
 at one end to the leg-rest support, and at  
 the other end to a lever pivoted on the seat.
- It is an object of the invention to provide  
 such a mechanism which can be adjusted  
 by the occupant without displacing the  
 centre of gravity too much.
- According to the invention, in adjustment  
 mechanism, an actuating lever for the leg-  
 rest has one end which engages the leg-rest  
 support while its other end is connected to  
 a push rod pivoted to the seat, the actuating  
 lever being pivoted on one arm of a crank  
 which is pivotally mounted in relation to a  
 chair frame, while the other arm of the  
 crank engages a rod the rearward end of  
 which is pivotally mounted in relation to  
 the chair-back, and to the frame through  
 a rocking arm.
- Therefore, when the chair-back is ad-  
 justed in relation to a seat supported on  
 the chair frame, the pivot of the back and  
 consequently the entire seat-chair back sys-  
 tem is moved forwardly, i.e. into the frame,  
 far enough for the centre of gravity not to  
 be much displaced. Therefore, the back of  
 the chair can be heavily loaded in the re-  
 clining position without showing much tend-  
 ency to tilt.
- It is advantageous for the rod which  
 engages on the crank to be extended beyond  
 the point of engagement on the crank (pre-  
 ferably upwardly), and for this extension to  
 have a stop for the leg support mechanism.  
 It may also be connected to the frame by  
 a spring, which serves as a return spring
- to restore the chair-back from the reclining  
 position to the normal chair-back position.
- The invention may be carried into practice  
 in various ways but one embodiment will  
 be described by way of example with refer-  
 ence to the accompanying drawings, in  
 which:
- Figure 1 shows the chair in sitting posi-  
 tion;
- Figure 2 shows the semi-reclining posi-  
 tion; and
- Figure 3 shows the reclining position.
- A chair frame 1 connects the two sides 2  
 of an armchair to each other and supports  
 the seat 3 and back 4 of the arm-  
 chair through a lever adjustment gear  
 or mechanism according to the inven-  
 tion. The lever adjustment gear is secured  
 on the chair frame by means of a frame  
 fitting 5. The seat 3 is disposed on fitting  
 members 6 and 7, a leg support gear also  
 being disposed on the fitting member 7. The  
 chair-back is fixed to a fitting member 8  
 which is pivoted at 9 on the seat fitting mem-  
 ber 6, the bottom end of the member 8 hav-  
 ing an extension 10. On the front seat fitting  
 7 are leg-rest guide rods 11 and 12 which  
 are connected to leg-rest guide rods 13 and  
 14 in a Nuremberg scissor arrangement. A  
 leg support fitting 15 is used for attachment  
 of a leg-rest 16. The cranked rear leg-rest  
 guide rod 11 is pivoted on the front fitting  
 7 at 17. The bend in the rear leg-rest guide  
 rod 11 is pivoted at 18 to one end of an  
 actuating lever 19 whose central fulcrum  
 20 can pivot on a crank 21 pivoted at an  
 intermediate point 35 on the frame fitting  
 5. Pivoted at the other end of the actuating  
 lever 19 is a push or pull rod 22 whose  
 rear end is pivotally mounted on the seat  
 fitting 6. The lower rear end of the crank  
 21 is pivoted at 23 on a rod 24, the rear  
 end 25 of which is pivoted to the extension  
 10 of the chair-back fitting member 8 and,  
 through a rocking arm 26, to the frame  
 fitting 5. At its front end, the rod 24 has  
 an extension which is approximately  
 parallel with the lower arm of the crank 21,

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which extension is connected by a spring 28 to the frame fitting 5, and which carries a stop 27 for the leg-rest gear while the armchair is in the sitting position.

- 5 Upon adjustment from the sitting position into the semi-reclining position, pressure on the chair-back causes the seat to move rearwardly, this movement being transmitted through the rod 22 to the actuating lever 10 19 to cause the leg-rest to be extended without the chair seat having to be moved any great distance rearwardly. The distance by which the seat is moved rearwardly as the leg-rest is extended, is less than 4 cm, so 15 that the centre of gravity displacement remains only insignificant during the first adjustment phase.

- The second adjustment phase, from the semi-reclining into the reclining position, is 20 initiated by applying a loading to the chair-back. This moves the seat further rearwardly and transmits the movement through the rod 22 to the actuating lever 19. However, since the actuating lever 19 is in its extreme position, it cannot be pivoted any further. The 25 rearwards movement of the chair seat must therefore necessarily produce a pivoting of the crank 21 about its pivot point in the frame fitting 5. On the one hand, this causes the front part of the seat to be raised by 30 the front arm of the crank while on the other hand the bottom part of the crank 21 moves the rod 24 forwardly. The pivot point 25 of the rod 24 on the arm 26 and the continuation 10 of the chair-back fitting member 8 is likewise moved forwardly in relation to the frame, so that the rearwards 35 movement brought about by the inclination of the chair-back is fully compensated. The forwards movement of the rod 24 stretches the spring 28 so that, when the loading on 40 the chair-back is removed, the spring 28 again pulls the rod 24 rearwardly and so

returns the chair-back to the semi-reclining position.

The pivoting movement of the crank 21 is limited by two stops 29 and 30 on the frame fitting 5. A tension spring 31 acts between the rod 22 and the frame fitting 5.

#### WHAT WE CLAIM IS:—

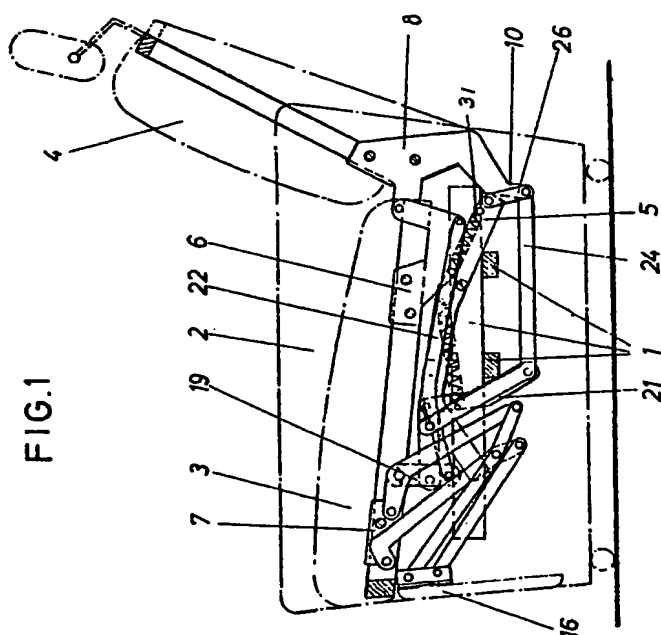
1. Adjustment mechanism for reclining armchairs with an extensible leg-rest, in which an actuating lever for the leg-rest has one end which engages the leg-rest support while its other end is connected to a push rod pivoted to the seat, the actuating lever being pivoted on one arm of a crank which is pivotally mounted in relation to a chair, while the other arm of the crank engages a rod the rearward end of which is pivotally 60 mounted in relation to the chair-back and to the frame through a rocking arm.
2. A mechanism as claimed in Claim 1, in which the chair-back has an extension piece pivoted to the rod.
3. Mechanism as claimed in Claim 1 or Claim 2, in which the chair-back is pivoted to a seat supported on the chair frame.
4. Mechanism as claimed in any of the preceding claims in which the rod extends 70 beyond its point of engagement with the crank, and carries on this extension a stop for the leg-rest support.
5. Mechanism as claimed in Claim 4 in which the rod is connected to the frame 75 by a spring.
6. Adjustment mechanism for reclining arm chairs constructed and arranged substantially as herein specifically described with reference to the accompanying drawings. 80

KILBURN & STRODE  
Chartered Patent Agents,  
Agents for the Applicants.

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Sheet 1



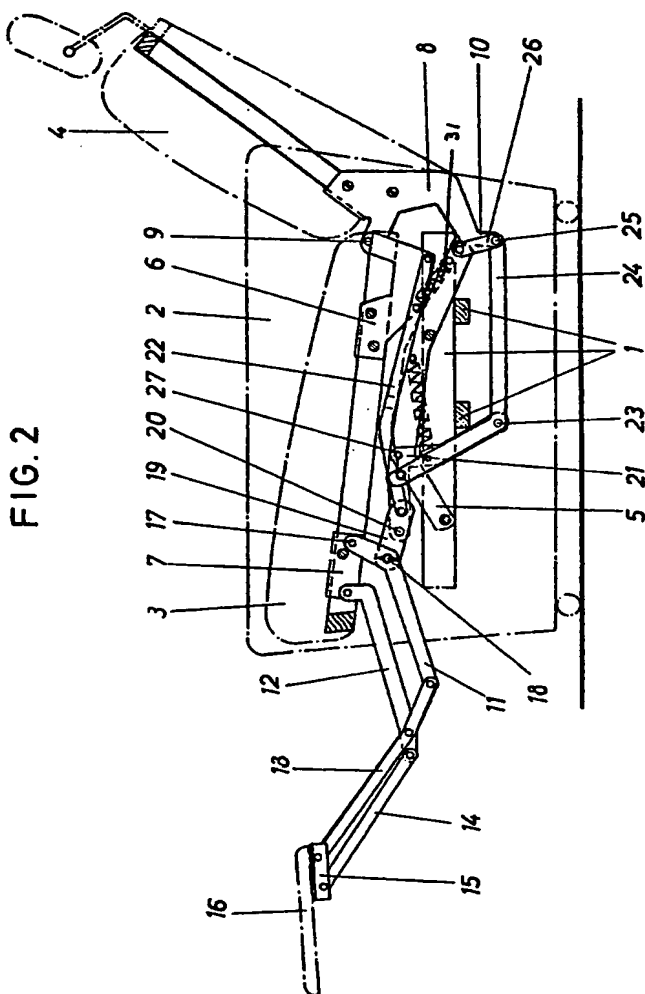
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Sheet 3

FIG. 3

